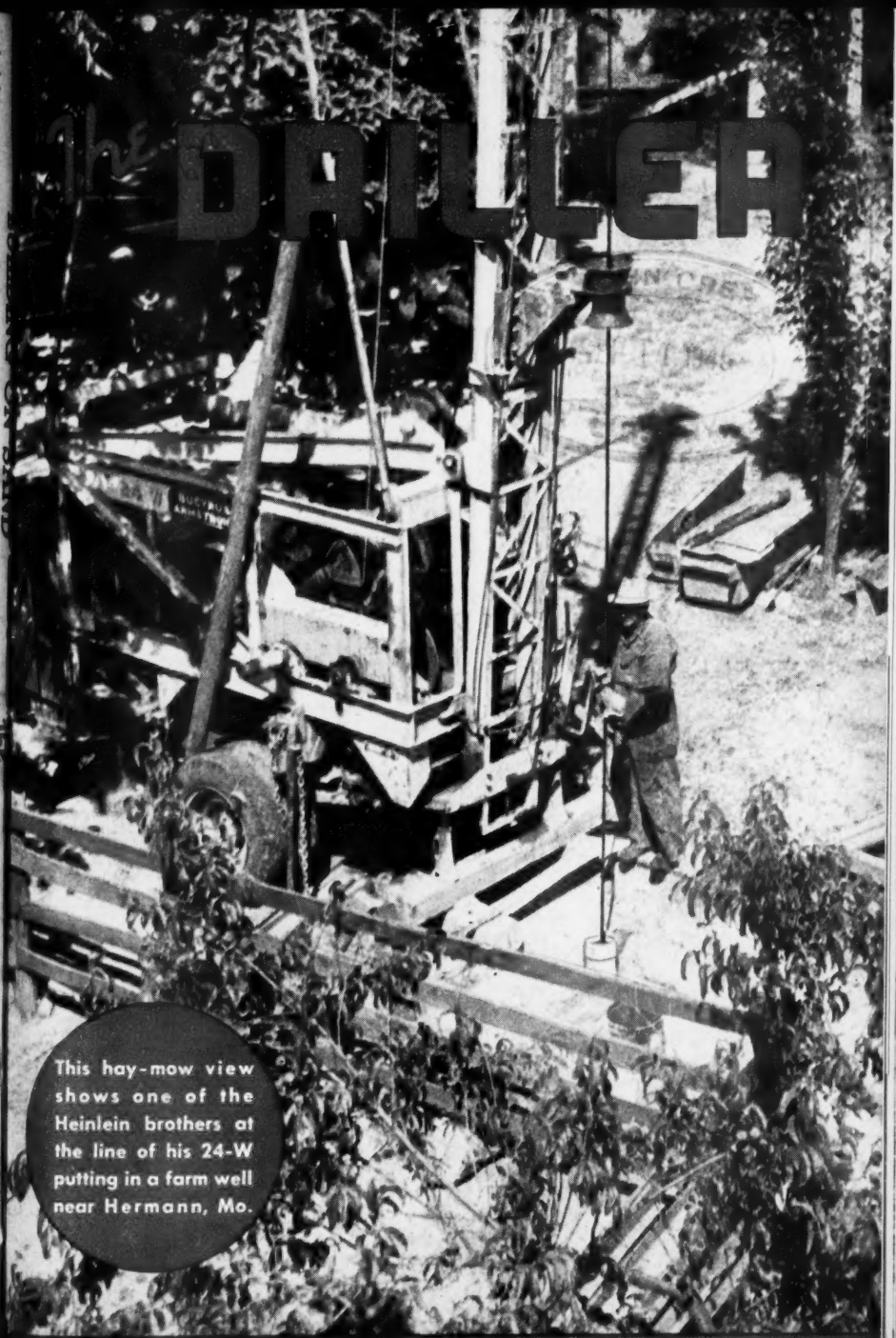
DRILLER



This hay-mow view shows one of the Heinlein brothers at the line of his 24-W putting in a farm well near Hermann, Mo.

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VOLUME 19 SEPTEMBER, 1945 NUMBER 9

What Does This Picture Tell You about the Bucyrus-Erie 21-W

Just examine the picture below, showing the frame and machinery of the 21-W, and you'll see that . . .

1. . . . the 21-W, like all Bucyrus-Eries, has an all-steel, electric welded box frame that keeps engine, reels, shafts, and gears in smooth working alignment.

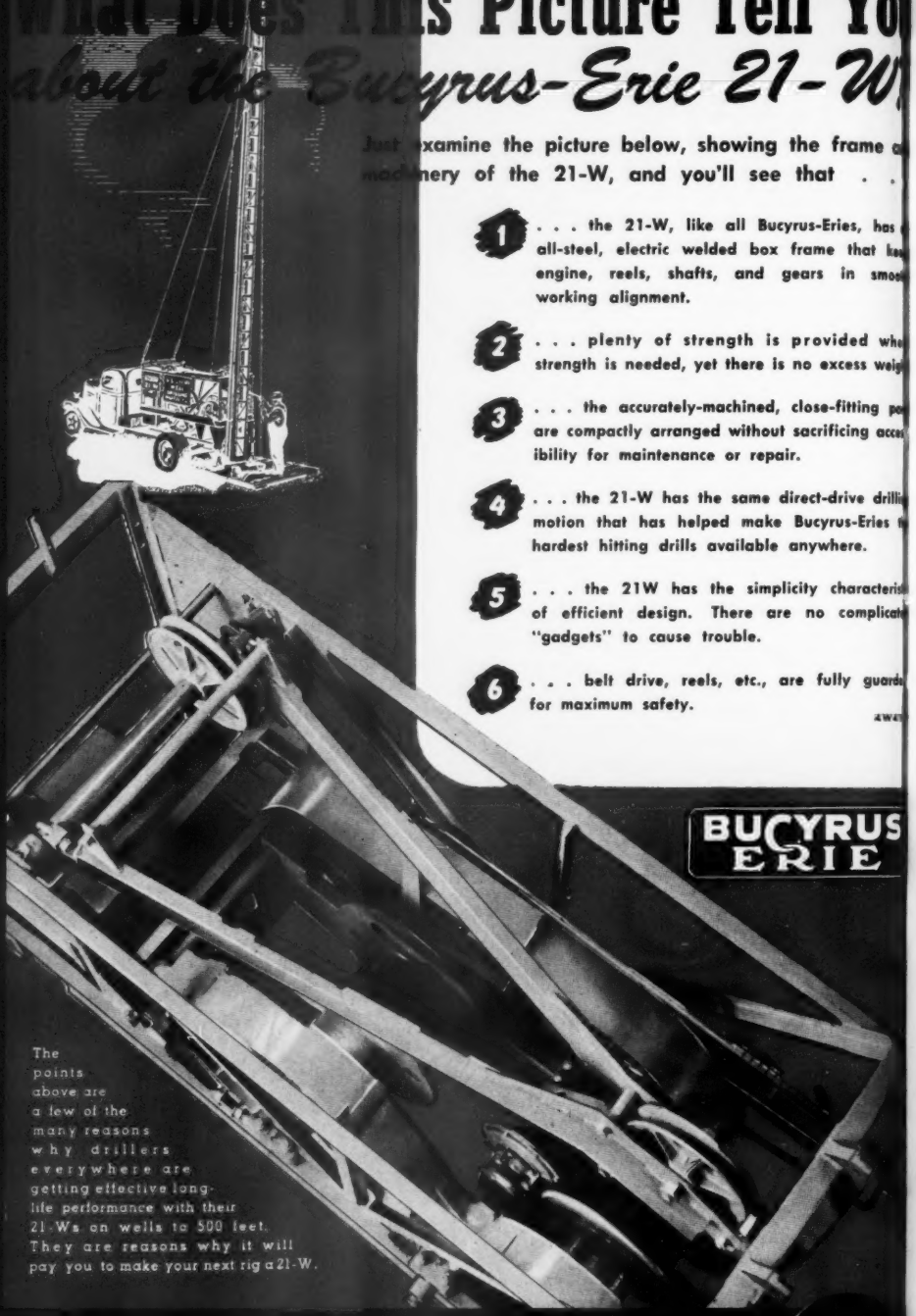
2. . . . plenty of strength is provided where strength is needed, yet there is no excess weight.

3. . . . the accurately-machined, close-fitting parts are compactly arranged without sacrificing accessibility for maintenance or repair.

4. . . . the 21-W has the same direct-drive drilling motion that has helped make Bucyrus-Eries the hardest hitting drills available anywhere.

5. . . . the 21W has the simplicity characteristic of efficient design. There are no complicated "gadgets" to cause trouble.

6. . . . belt drive, reels, etc., are fully guarded for maximum safety.



The points above are a few of the many reasons why drillers everywhere are getting effective long-life performance with their 21-Ws on wells to 500 feet. They are reasons why it will pay you to make your next rig a 21-W.

BUCYRUS-ERIE CO.

628.11
3

SELLS DEMING PUMPS *Exclusively*

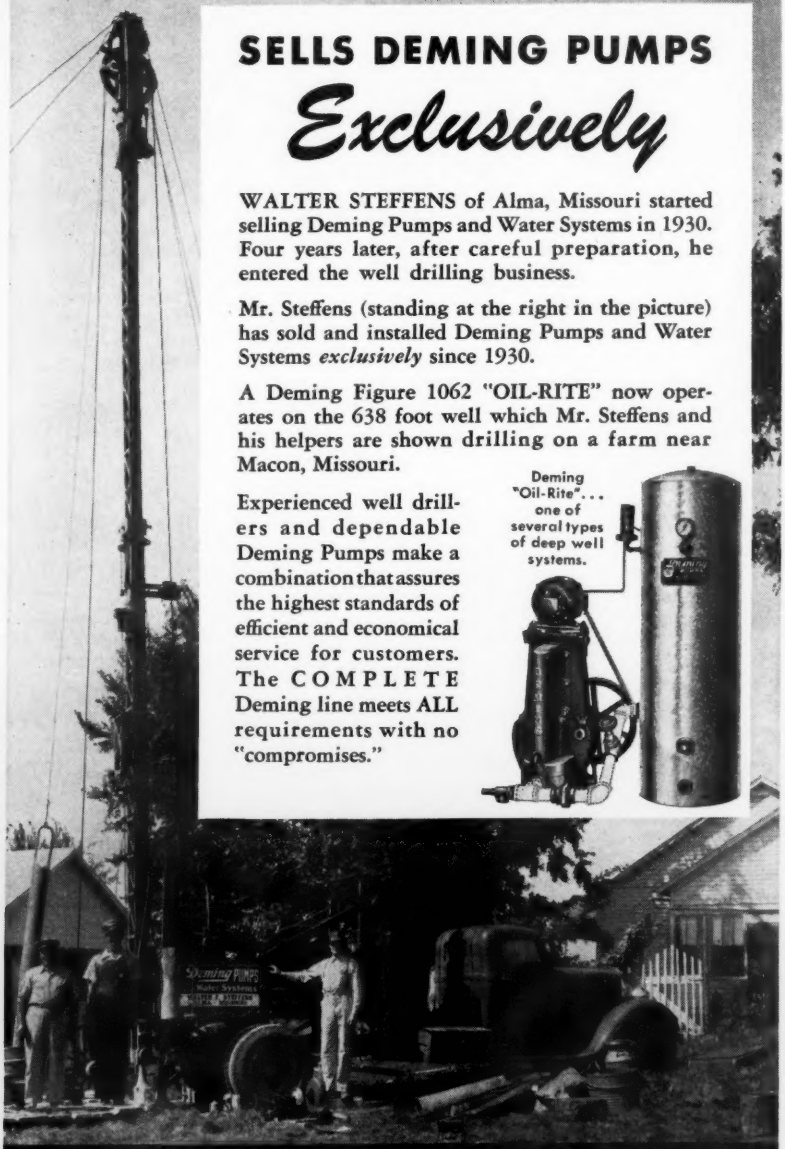
WALTER STEFFENS of Alma, Missouri started selling Deming Pumps and Water Systems in 1930. Four years later, after careful preparation, he entered the well drilling business.

Mr. Steffens (standing at the right in the picture) has sold and installed Deming Pumps and Water Systems *exclusively* since 1930.

A Deming Figure 1062 "OIL-RITE" now operates on the 638 foot well which Mr. Steffens and his helpers are shown drilling on a farm near Macon, Missouri.

Deming "Oil-Rite"... one of several types of deep well systems.

Experienced well drillers and dependable Deming Pumps make a combination that assures the highest standards of efficient and economical service for customers. The COMPLETE Deming line meets ALL requirements with no "compromises."



THE DEMING CO. • SALEM, OHIO

Sydnor Sells Wells.. and Water!

By L. H. HOUCK

Basically a well drilling firm since the year 1889, Sydnor Pump & Well Company of Virginia today augments its regular income by selling water to small communities. The unusual waterworks system designed by them has proved highly interesting, satisfactory, and profitable.

WHILE most water well drillers sell and put in wells for individual users, the Sydnor Pump & Well Company of Richmond, Virginia, goes a step farther by putting in the well and selling the water!

Water ticking through meters from Sydnor wells brings in revenues amounting to about $40,000 a year from a system of twenty small waterworks plants which the firm has constructed over a period of years for unincorporated areas and subdivisions not connected with urban facilities. The personnel includes Thos. G. Sydnor, president; Austin Sydnor, secretary; George J. Stoneman, treasurer; and Garland S. Sydnor, vice-president and chief engineer.

Garland Sydnor, in cooperation with the state health department and the builders of small unincorporated communities, designed and constructed the system. It is now known as a small waterworks for unincorporated areas.

Service Open to All

Installed without levying special taxes or selling bonds, the entire waterworks system is constructed by the organization expecting to make a profit from the sale of water to the user. There never are squabbles or dissatisfactions as with tax-built systems where certain members may protest a lack of service. Instead any member of the community may or may not subscribe to the service but those who do subscribe have found from experience that they receive an exceptional service.

Right to operate and lay the mains is conveyed to Sydnor in a land grant or agency agreement which runs with

Modern homes like these are happy to be subscribers to a supply of good water served with an unusual record of continuous production.

Here is a Sydnor drill rig putting in a water well for purposes other than home consumption. Water from this well will be used to recharge locomotive boilers.

the land regardless of the owner. Each unincorporated area is assured in the contract that the particular service required for the area will be rendered. The contract also specifies that where several small communities are near each other the company has the right to run water supplies into or out of any one. This clause actually is a protection for the user as exemplified in one case where Sydnor has six systems interconnected so each of the six communities is safeguarded with the reserve of the entire works.

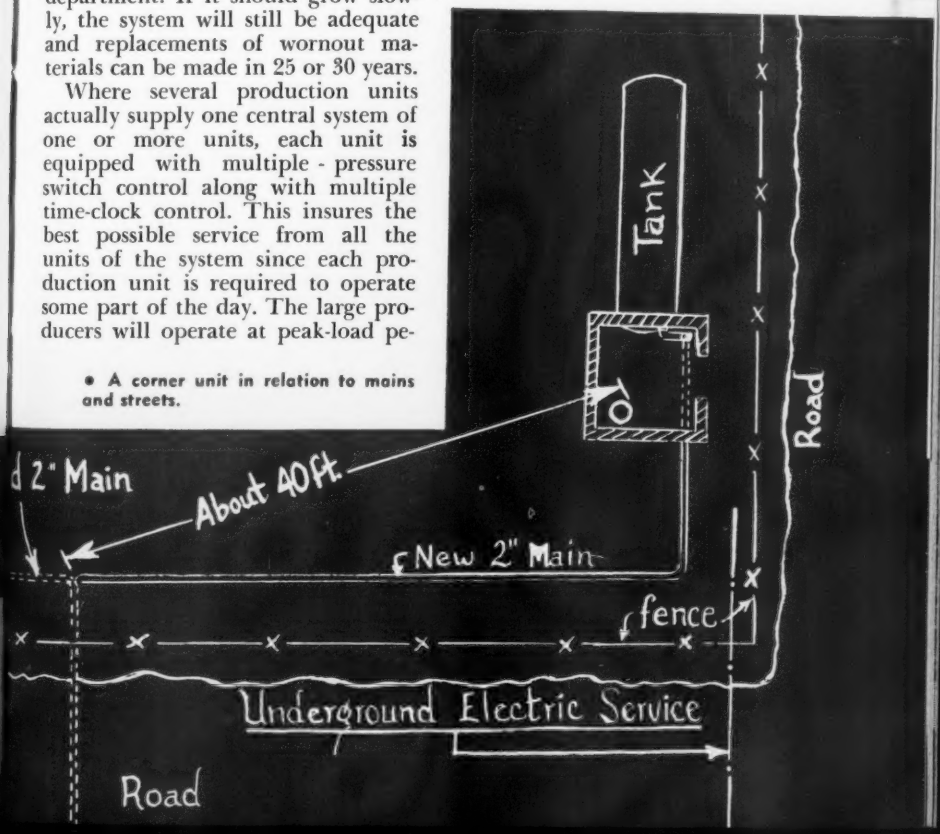
Allows For Community Growth

The system is so designed and the materials are so selected, Sydnor said, that if the community becomes closely built up and can absorb the cost of fire mains, it may employ a fire department. If it should grow slowly, the system will still be adequate and replacements of wornout materials can be made in 25 or 30 years.

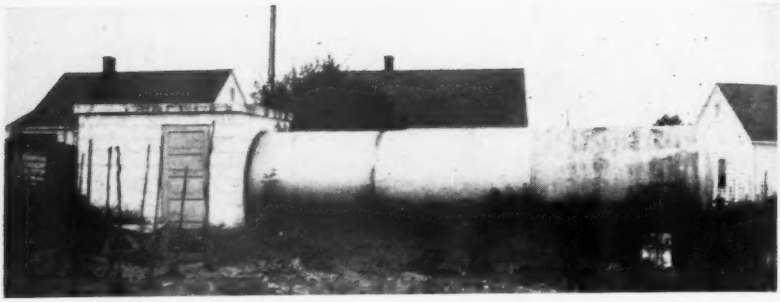
Where several production units actually supply one central system of one or more units, each unit is equipped with multiple - pressure switch control along with multiple time-clock control. This insures the best possible service from all the units of the system since each production unit is required to operate some part of the day. The large producers will operate at peak-load periods, the small producers at off-peak periods and all of them any time an unusual load occurs.

Sydnor recalled that the original central water system served seven users and has grown to where it serves about 800 recorded lots and as many more unplotted and unrecorded. It has more than 276 separate water service connections, 12 drilled wells, 10 complete automatic pump stations, 10 distributed storage units and several miles of looped mains with the whole system completely metered.

"We drilled an eight-inch diameter well to a reasonable depth in gray granite," he said. "The tested supply was about 15 gpm and was equipped with piston-type pumping equipment of a capacity equal to the well. The water then was delivered to a



• A corner unit in relation to mains and streets.



• The waterworks pumping equipment and controls are concrete enclosed along with the end of a 5000-gallon hydro-pneumatic storage tank. This is only one of several producing units comprising a chain of Sydnor's waterworks system.

5000-gallon hydro-pneumatic above ground storage tank. The end of the tank and the pump unit and all the controls were enclosed in a cinder block house provided with a concrete roof, steel manhole and metal covered door.

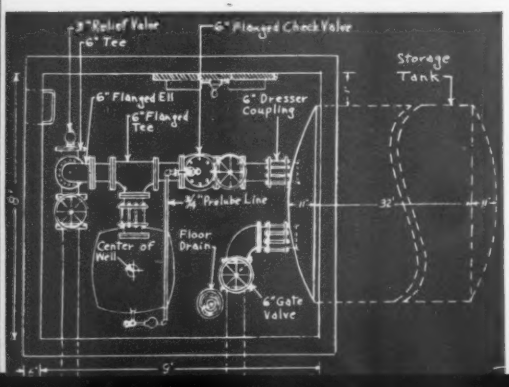
"This equipment served very well until the load reached 20 houses," Sydnor continued. "While it would have taken care of about 30 houses in winter we anticipated the overload and started Unit No. 2 about a quarter of a mile away, where we hoped to obtain a considerable volume of water.

"But we were disappointed in the second well. We wanted enough flow to install a turbine pump but after drilling 800 feet we got only 15 gpm."

As the number of houses increased it was necessary to get peak load protection. This was accomplished with additional water storage maintained in a large closed-concrete reservoir built by Sydnor. A pump unit—selected so the full well capacity could be delivered either to the distribution system under full pressure or to the concrete reservoir —had its controls so arranged it could be started and stopped either by the water level in the reservoir or the water pressure at Unit No. 1.

Controlled Water Volume Assured

Experience showed the heaviest load came during the sprinkling period in late summer afternoons which required the installation of a large capacity booster to take water from the closed concrete reservoir and deliver it into the distribution system. Its starting and stopping is controlled entirely by the water pressure at Unit No. 1. The system is so wired that whenever the booster pump runs the production unit also runs and continues to run until the reservoir has reached its predetermined level to maintain the greatest possible volume of water in the reservoir at all times. An electric control



• Top view of a typical Sydnor pumphouse installation.

was also provided to retain about one third of the water in the reservoir in case of a main break.

As community development continued, the Sydnor Pump & Well Company drilled a well for a third unit and got 30 gpm. A deep well turbine pump and complete hydropneumatic storage system was tied into the distribution system covering areas 1 and 2. The turbine, water lubricated, was equipped with complete automatic electric control and a 100-lb. pressure working tank.

Further expansion was desired but war and a shortage of materials interrupted the installation of Unit No. 4.

Weathers Sleet Storm

"We have found the best waterworks in the world will not run itself," said Sydnor. "It is necessary to have a full time superintendent of water, with a full time assistant, and a service truck completely equipped with supplies and tools for working on the system. In addition, the central water systems are protected by the whole of the Sydnor Pump & Well Company organization which includes management, maintenance mechanics, drillers and construction personnel, all or part of which can function when it becomes necessary.

"As an example, I remember an extreme emergency which occurred in January, 1943, when the Richmond area suffered the worst sleet storm in 50 years. Nearly half of the electric wiring went down and 90 per cent of the electric service in outlying areas was disrupted and this power failure included the unincorporated area where our waterworks is located.

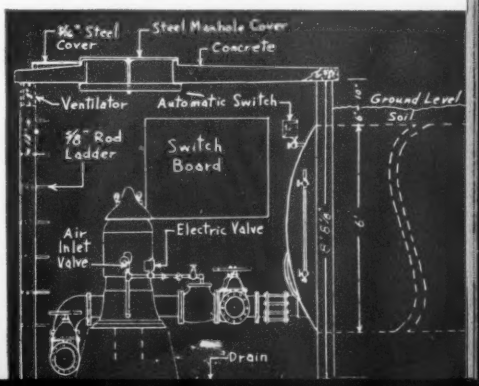
"None of the users in our area was without water service for a greater period than six hours because we put six crews into the field using gasoline-driven production units and gasoline-driven air compressors. Both the electric company and the telephone company were out for periods up to ten days."

Costs to the user of such a system were cited by Sydnor in the example of a town in east Virginia with about 40 houses. The town, established about 100 years ago, had dug wells going dry and drilled wells becoming unuseable.

When a central water system was constructed, complete from the drilled well to the meter at the property line, the State Board of Health approved the quality of the water and volume to the 36 users. An average connection fee of $175 was paid by each user. Four or five houses did not take advantage of the system, paid no connection fees, and were not obligated or taxed because their neighbors wanted the water. Rates ran about 50 cents per 1000 gallons used.

In all parts of the country there are many unincorporated areas already built and some in blueprint stage who can enjoy the benefits from using a system of waterworks such as devised by the Sydnor organization.

With the Sydnor organization, too, plans are going forward to install new units and improve still further the service now given to hundreds of highly satisfied subscribers.



• Cross section of an underground unit similar to the above-ground waterworks.

Water in Warfare

Although surrounded by miles of ocean or sea, America's fighting men often thirsted for want of drinkable water. The problems, difficulties, and hazards encountered by combat engineers are told in these accounts which highlight the vital importance of obtaining and maintaining a good supply of water for both soldiers and civilians in occupied territories.

Water Supply by Combat Engineers

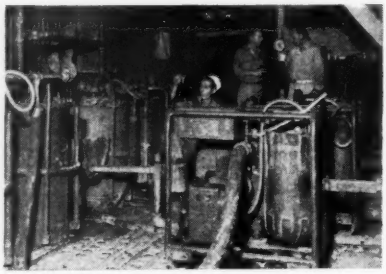
Joseph A. Lieberman
Captain, Corps of Engineers

The Combat Engineer Battalion, normal engineer component of an Infantry Division, is responsible for supplying water to the 15,000 troops of the division.

Water supply activities and problems in the South Pacific theater were extremely varied and in almost every instance no regular water supply was available, yet the battalion had to be able to distribute a safe, potable water in a day.

Accessible fresh water sources that could be developed were extremely limited. This accounts for the use of salt water distillation units, equipment absolutely essential for general and emergency water supply in this theater. The units were of two capacities: 250 gallons per hour and 100 gallons per hour, both double effect evaporators. They were self-contained, consisting of a pump, oil-fired boiler (first effect), evaporator (second effect), condenser, and distillate cooler.

Successful wells were drilled on one of the tropical islands. An adequate water supply was obtained at 70 to 80 feet. Lack of high lift pumps at first precluded the use of such deep wells. A percussion well rig drilled holes for 6-inch diameter casings through hard coral formations at a rate of about 3 feet per hour.



• A construction battalion on Tulagi erected this building over a sea water distillation unit.

Official U. S. Navy Photo

Raw water sources of all types and descriptions were used. Fresh water sources varied from streams in New Caledonia, whose flow was approxi-

Editor's note: This condensation of three feature articles written by military experts in February 1944, May 1944, and March 1945 is reprinted through the courtesy of THE MILITARY ENGINEER.

mately 100 cubic feet per second and whose water required practically no treatment, to swamps on New Georgia in which the water had high turbidity, color, and taste and with which it was difficult to do more than render the water safe.

In general, the islands were of volcanic or coral origin. The soil mantle on coastal plains varied from 0 to 8 feet and was underlayed with coral which was fractured and porous but very hard. Drainage was very erratic. Streams originating in the high slopes usually disappeared into coral fissures, fractures or sinkholes before they reached the coastal plain. This peculiar feature greatly increased the problems of accessibility and location as it usually was necessary to go upstream over less easily traversed terrain to find adequate stream flow. Where water points were located on streams flowing all the way to the ocean, care had to be taken to place the intake above the point of salt water intrusion. At times this was not feasible and pumping had to be limited to periods of low tide.

Water Found at 20 Feet

On New Georgia, a bomb crater reached the water table for a successful water source. There were places on the smaller islands in the New Georgia group where fresh water could be tapped by wells. Water was usually found at 20 to 25 feet. Excessive pumping and drawdown with subsequent salt water intrusion ruined some of these sources.

At first holes were dug by hand near the beach to help supplement the supply from other installations. Water in small amounts was found at 2 to 3 foot depths. Dipped by hand, it was allowed to settle and then chlorinated. Although slightly brackish, it was drinkable.

Extremely tedious and arduous hand carries often had to be resorted to; these reduced the fighting strength of units. The carrying of 5-gallon bidons of water over miles of rough jungle track is not the easiest task in the world.

• Carrying five-gallon bidons of water is an arduous task over rough terrain on Bougainville.
Official Signal Corps Photo

For one month on Banika Island in the Russells it was possible to arrive at a fairly accurate consumption figure of five to six gallons per capita daily. This represents all requirements but does not include catchment water which it is estimated would increase the figure by 25 to 50 per cent.

Water Purification in Italy

William J. Diamond
First Lieutenant, Corps of Engineers

From the beaches of Salerno to the front lines, United States Army Engineers supplied fighting troops, Corps and Army units, and civilians with an abundance of pure water—accomplished by a total of less than a thousand men.

One of their prime missions was to set up distillation units to produce palatable water.

Three sources were available: (1) Wells of the shallow dug type: usual-

(Continued on page 16)

The DRILLER

A JOURNAL FOR WATER WELL DRILLERS

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Vol. 19 September, 1945 No. 3

Many Servicemen Potential Drillers

ALMOST every industry in the nation has plans in operation to rehire returning servicemen. Departments have been set up for that purpose, for they recognize an obligation and realize opportunities to hire well-trained servicemen who can and would like to join with them.

The water well drilling industry should consider this opportunity, too, for many returning servicemen hope to make drilling their peacetime career. Farm youths placed in a maintenance battalion become technical sergeants and want truck-repair jobs upon discharge. Office boys have learned welding, radio techniques, and other trades and don't want their old jobs back. Hundreds of skills, including well drilling, were taught to men for warfare but which very readily can be followed as civilian occupations.

Army-Trained Men Learn Water Supply

The condensation of three articles about water supply for the armed services in this issue tells how thousands of Army men, some with previous experience but others with newly acquired experience, have maintained a supply of drinkable water to fighting men. They have studied rivers, streams, springs, sea water, dug-wells, driven-point wells, and drilled-wells along with ground formations, water purification, and distillation units. These men have learned a wealth in water supply, acquired a deep interest in it, and many plan on pursuing it in civilian life.

What effect will these war-trained drillers have on the drilling industry? Important for the present will be the relief in the labor problem as these new men replace those who left for the service.

Will Balance Industry

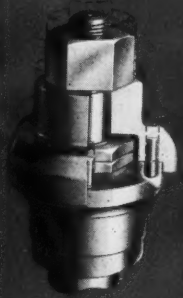
We don't believe there need be any fears that those servicemen who "get into" well contracting at any time will be numerous enough to upset the industry by reason of their number, especially in view of the comparatively large number of contractors who went out of business when war conditions made it necessary.

A good number of the latter already have allied themselves with other industries and have no thought of returning. The influx of new "blood" would probably go little farther than offsetting those who abandoned the drilling game. The

(Continued on page 21)

COOK CRAFTSMANSHIP

...costs no more!

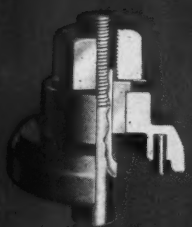


AUTOMATIC PIN CLUTCH

A positive safeguard against damage to motor, and entire turbine. Clutch normally engages solid driving shaft with hollow motor shaft. However, should the motor accidentally be rotated in the wrong direction, the driving shaft is *automatically* disengaged from the motor shaft. An important Cook development.

ENCLOSED IMPELLERS FOR MAINTAINED EFFICIENCY

There can never be *circulation* loss, or *leakage* due to sloppy adjustment in an *enclosed* Cook Impeller. The vanes and passages are cast *integral*, and *turn as a single unit*. Here again, you are assured high efficiency being maintained in the field. Each impeller is mathematically designed and hand finished to give *maximum upward lift* to the water column. Streamlined passages through the bowl minimize friction and turbulence, *deliver greater gallonage at head*.



MICROMETER IMPELLER ADJUSTMENT

The Cook Head Shaft Nut Adjustment assures the highest rated efficiency *being maintained in actual service*. To compensate for normal skirt wear it is merely necessary to adjust this nut, thus lowering the impellers, stopping excess leakage and restoring efficiency. A simple, quick operation.

If it's trouble-free, day-in, day-out service you're looking for in a Deep Well Turbine Pump, the unique features illustrated above are convincing proof of safeguarded Cook performance. *Quality* has real meaning when applied to Cook Turbine Pumps. They are a rare combination of sound design and excellent material, produced with genuine pride in precision workmanship. Why else would you find them in so many of industries' exacting installations? Yet with all their merits, *Cook Deep Well Turbine Pumps cost no more!*

Write for literature and name of nearest dealer.

A.D. COOK, Inc.

DEEP WELL & INDUSTRIAL TURBINE PUMP DIVISION

Lawrenceburg, Indiana

NEWS OF THE MONTH

Floridan Drills Philippine Wells

WHEN one CBMU in the Philippines got around to drilling for water, it found no well drill available. So the outfit's crane was rigged up with a pile driver. An air and water jet made of 2-inch water pipe and a ¾-inch air line, running off a 311-cubic foot compressor was used for cleaning out the casing.

The casing was driven in 10-foot sections by a 2,500-pound drop hammer, the sections being welded together as needed. The well was driven to a depth of 52 feet the first day and a three-inch centrifugal pump utilized for cleaning out the casing. The bottom of the well was found to be in a very fine sand which clogged the pump intake continually. The following day the casing was driven to a depth of 74 feet. Upon cleaning the casing to the depth, it was found to be seated in a coarse volcanic aggregate deposit. Twenty-four hour tests showed the well to be good for a minimum of 60 gallons per minute with a draw down of only 10 feet. Three more were driven in the same manner, and all have proved satisfactory.

H. P. Harrelson, CBM, was in charge of the drilling crew, which drove a total footage of 321 feet. The speed and efficiency with which the job was done was due to a great extent to G. M. "Pappy" Gaines, SF1c, of Bradenton, Florida, who has had 14 years experience drilling wells in and around his home state.

By Sherwood R. Hughes, SK1c, from Seabee.

Pump Line Awarded Firm In Missouri

UHRICH SUPPLY COMPANY of North Kansas City, Missouri, has been awarded the distributorship of Peerless Pumps in Kansas and Missouri in an announcement that told of their merging with the entire Butters Water Works division of the Butters Equipment and Supply Company.

C. H. Pratt, Uhrich manager, is enlarging the sales and installation facilities and will have Mr. Butters in his organization to act in a consulting capacity.

• While drilling a residential well in Woodale, Illinois, the Suburban Well Drilling Co. of Elmhurst was fortunate, as well as surprised, to find it had an artesian well. The four-inch hole went down 110 feet and flowed so fast that Bill Smeja, at the left, and helper Mike Calabria quickly had to cap the well to prevent flooding the yard. The picture was snapped while the rig still was on "location".

*EVERY PART MADE TO COORDINATE WITH EVERY OTHER PART

For Better Performance

EVERY PART used in a Delco Water System is made in our own factory—under one roof. Complete control of each step in engineering, manufacture, inspection and assembly is thereby attained. Under this close supervision individual parts are coordinated to work together smoothly.

Such teamwork in manufacture shows up in performance. It is one of the reasons why thousands of Delco Water Systems in use have outstanding records for long service and efficient operation. It is another good reason why prospective dealers should try first to get a Delco franchise.

DELCO Shallow Well Water System, Model AAT42

GENERAL MOTORS
DELCO WATER SYSTEMS

MAIL COUPON TODAY!

DELCO APPLIANCE DIVISION, Dept. D 95
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Rochester 1, N.Y.

I am interested in your Plan for Dealers.

Name_____

Street_____

City_____ State_____

WIT BITS

"KP, where've you been all morning?"

"Filling the salt shakers like you told me to, sergeant."

"All that time?"

"Yep, it ain't easy pouring salt through them little holes."

A white man said to an Indian, who had stopped to rest his panting horse: "Ride just as fast as you can and the breeze will cool off your horse."

The Indian did so and soon the horse fell dead. He looked at the animal and finally said with resignation: "Ugh! Frozen!"

A doctor whose specialty was skin diseases was asked why he selected that particular branch of medicine.

"Because my patients never get me out of bed at night, they never die and they never get well."

"That's Llewellyn—the MODERN Well Driller"

"It says here in the paper," observed an elderly gentleman, "that a man is run over in New York every half hour."

"Tsk, tsk!" murmured the old lady, "poor fellow."

"What became of the auto mechanic who went into the cavalry?"

"He crawled under a mule to see why it didn't go."

A cow was crossing the road and the speeding motorist rammed into it. Out of the farm house ran the owner, shouting angrily.

"Now, now," said the motorist. "Keep calm. I'll replace your cow."

The farmer stopped suddenly, looked him up and down, and then spat.

"Shecks!" he said. "You can't give milk."

"Why does that cow seem so contented while being milked?"

"Wal," replied the farmer, "she's a baseball fan and likes the Yanks."

One of those sandlotters now roaming the outfields of some major league team came sheepishly to the bench after missing three flies in one inning. "Guess I need glasses," said he to the irate manager.

"Glasses! You're too far gone for that. What you need is radar!"

Farmer: "See here young fellow, what are you doing up in that tree?"

Driller's Son: "Oh, an apple fell down and I'm trying to put it back."

Doctor (after bringing victim to): "How did you happen to take that poison? Didn't you read the sign on the bottle? It said 'Poison'."

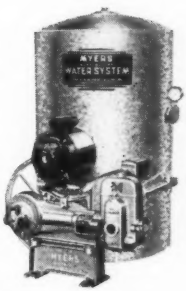
Ebenezer: "Yassuh, but Ah didn't believe it."

Doctor: "Why not?"

Ebenezer: "Cause right underneaf it was a sign which said, 'Lye'."

On the Subject of know-how!

A MESSAGE TO MYERS DEALERS



KNOW-HOW is the Number One ingredient in any business — and particularly in the water system business. Your special knowledge of local conditions — your know-how in selecting the right type and capacity for each installation — the splendid performance of MYERS equipment in service — these are the factors that make satisfied customers for you, that contribute in large measure to your success.

Keeping your finger on the pulse of your big mass market and keeping your water system know-how geared to modern merchandising methods will become increasingly important from now on. Make your future plans with the assurance that you can depend on Myers know-how and facilities for full local support

THE F. E. MYERS & BRO. COMPANY
Dept. C-57, Ashland, Ohio

Water Systems • Pumps • Sprayers • Hay Unloading Tools

Warfare . . .

(Continued from page 9)

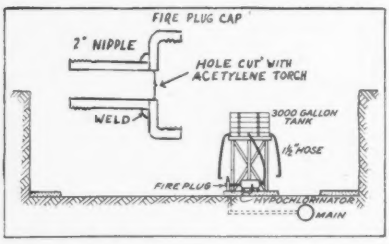
ly saline, low turbidity, no odor, potentiality of 10,000 to 20,000 gallons per day; (2) Streams of unlimited potentiality: saline taste, variable turbidity and odor: (3) Springs of excellent quality but limited quantity (several notable exceptions were springs with a flow of over 1,000,000 gallons per day).

Solved Purification Problems

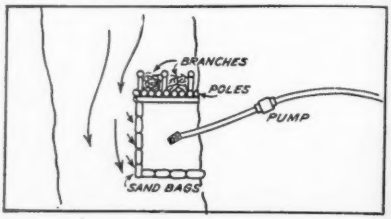
One company of the Water Supply Battalion performed unique service. Information received was: "NAPLES WATER SUPPLY SYSTEM HAS BEEN DESTROYED. CIVILIANS DRINKING WATER FROM SEWERS AND GUTTERS. THEY HAVE NOT WASHED CLOTHING OR PERSONS IN DAYS. TYPHUS AND TYPHOID IMMINENT." The company was sent to Naples with the task of supplying drinking water to an entire metropolitan population. The unit brought credit to the service to further solidarity relations between the Allies and the Italians.

The one source of water found within the city limits was a branch of the industrial water supply aqueduct which escaped destruction. Clear, odorless, tasteless, and unlimited, it was immediately taken over and a water point established. Barbed wire was very necessary to keep the mobs in line and prevent rioting.

Later, civilian water points were withdrawn and wet points, reached through fire plugs, were established to improve the service to troops. Where the pressure was high hypochlorinators were connected directly to the plugs. As the Italian pipe threads did not correspond to ours, it was necessary to make an adapter from the fire plug cap and a standard 2-inch nipple.



• Hypochlorinators were attached to high-pressure plugs with adapters to fit Italian-American threads.



• Sand-bag stream baffles diverted debris and mud from intake hose.

In one instance where water was drawn from a muddy stream, much difficulty was experienced with the strainer on a suction line becoming clogged with thick mud, leaves, grass, etc. The problem was solved by building a baffle to divert this debris. Results were good.

Water for the Invasion of Saipan

Dr. Harold T. Stearns

In planning for the invasion of Saipan, one of the most important preliminary steps was the interpretation of air photograhps.

In the northern end of the Charon Kanoa beach, miniature cove pat-

terns under water could be discerned, indicative of tidal springs. I assumed potable water, probably fairly high in salt, could be recovered in the beach by driving wells and recommended that assault troops be equipped with sand points. It was gratifying upon my arrival to find sand-point wells yielding most of the water supply for the Marines. Two sand-point wells at Green Beach yielded 25,000 gallons of potable water a day.

Japs Could Not Hide Pipelines

During terrain studies of the air photographs most of the pipelines were located. Japanese had reburied them deeper for bomb protection

• A pipe-line installation at an advance South Pacific base.
Official U. S. Navy Photo

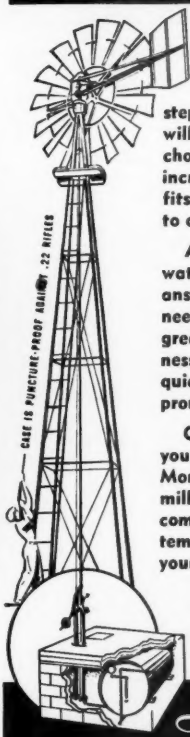
and they photographed as fine white lines caused by limestone fragments.

Given a jeep and a driver, I asked assault troops for everything relating to water or geology. Next I set out to find wells and pipelines. The Japanese, probably assuming they would not lose the island, had not sabotaged equipment. We soon had the deep-well turbine running in the

(Concluded on page 19)

SKY POWER

A MOTORLESS RUNNING WATER SYSTEM FOR EVERY FARM



Running water on every farm will be the next big forward step in rural living. It will mean comfort, easier chores, time saved and increased profits—benefits every farmer is eager to obtain.

A Monitor motorless water system provides the answer to the farmer's needs. It also provides a great new source of business for dealers who are quick to recognize its promise.

Call on the farmers in your area now. Sell a Monitor Sky Power windmill as the first step in a complete farm water system. This will establish your market for pressure tanks, automatic controls and fixtures when they are available.

Monitor SKY POWER WINDMILL WATER SYSTEM

THE Monitor LINE DEEP WELL WATER SYSTEMS • WINDMILLS • HAND PUMPS • PUMP JACKS • ENGINES • WATER WELL SUPPLIES

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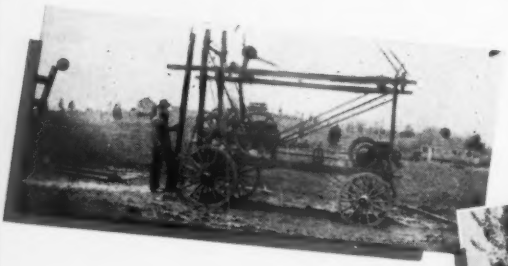
AXTELL CO.: Fort Worth, Tex.; Amarillo, Tex.; Lubbock, Tex.; San Angelo, Tex.

BAKER MANUFACTURING CO., EVANSVILLE, WIS.

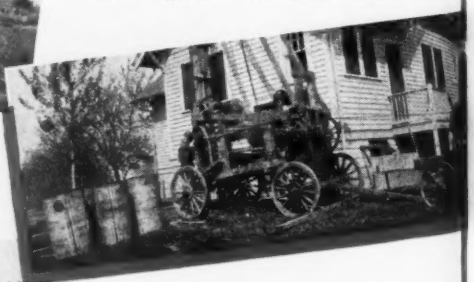
From Hagmann's ALBUM

Hagmann's first rig, steam operated, starts a 16 mile trip when 12 to 15 miles daily was good traveling time.

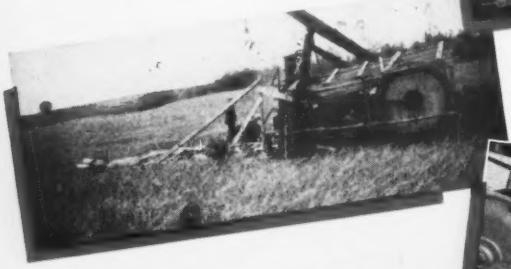
Taken over a period of more than 33 years, these pictures only partially tell the story F. N. Hagmann, Jr., of Vienna, Virginia has experienced in the well drilling business. They reveal, too, the progress made in the industry and the constant search for machinery improvement.



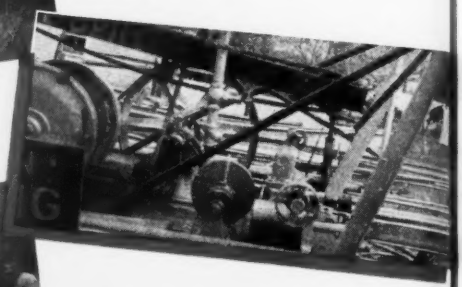
Three-h.p. driven and composed mostly Model T parts, this rig jetted test hole Later it put down four and six-inch hol with solid tools. Hagmann declared, "We were surprised at the hole it made."



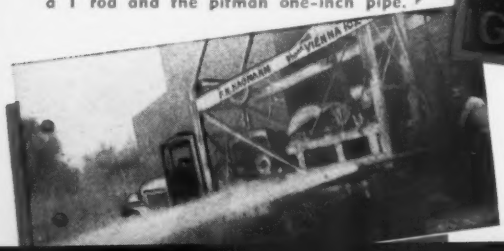
This cam-and-treadle Pierce holed five six-inch wells in one week in the '31 drought. "Who can tell its age?" asked Hagmann.



An abandoned wildcat rig illustrates th typical result of insufficient capital seeking quick riches.



The crank on this Miami driller's rig is a T rod and the pitman one-inch pipe.



After this later model rig put in a well Hagmann had it tested behind compressed air for 200 gpm.

Warfare . . .

(Concluded from page 17)

well near camp. The generator had been smashed by a bomb but the electric motor was in running condition. We hooked on a portable American generator. This well yields 100,000 gallons a day of excellent water and was soon serving most of the south end of the island. An irrigation well a mile away was put into operation to supply a field hospital. It yielded 300 gpm of chloride but was potable after chlorination.

Found Dead Japs at Water Source

Travelling over newly conquered country and locating wells and springs, there was no time to test water for salt except by taste. Several good wells had not been used by the troops because of dead Japs and animals lying around them. The men are so well trained not to drink water unless furnished in cans that one of my main jobs was to move chlorination units forward as soon as tasting proved the water potable.

One morning I got into the front lines where hundreds of men were bivouacked in fox-holes and drainage ditches. I spotted valuable Japanese engineer dumps and placed signs on them "Hands off, U. S. Engineer property," as the assault troops habitually damage much captured property by collecting souvenirs. The next afternoon I returned and found everything quiet, but instead of live soldiers I found a field strewn with more than 3000 dead, mostly Japs.

Gradually things became better. Bombings ceased; tents arrived; showers were installed; out of muddle, destruction, and dust orderly tent cities and airfields grew; wells were drilled; and water began to flow through pipelines.

Profitable shallow well drilling calls for Macwhyte "Hi-Lastic," because with "Hi-Lastic" you can make a longer stroke . . . keep the bit turning better on all types of formation . . . reduce tendency for the hole to get out of round, and for the bit to channel. "Hi-Lastic" is protected by internal lubrication. No manila cracker needed.

For profitable deep well drilling, use Macwhyte Standard Cable-Tool Lines. Just the right elasticity to strike long, hard, sharp blows.

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Hard-faces Bits With Borium For Better Drilling

FROM the city of Moriarty, New Mexico, comes a letter by J. L. (Jack) Lamb who tells us some interesting things about his experiences with hard-surfacing of drill bits.

Lamb has been putting in hole in New Mexico for twenty years so he has met many kinds of formations in his territory that calls for a variety of experience in the business. Some of his holes have gone down more than 1000 feet. Among the formations he has hit are granite, limestone shales, sandstones, bull quartz, red beds, paraffin shales, sands and boulders.

Jack uses jars when drilling in all formations. His 35-ft. string of tools packs a wallop of more than 2000 lbs. behind his own make drilling machine to get the 6¾-inch hole. The taper joints on his tools are 2¾ x 3¾ inches in size.

After trying all types of hard-surfacing rods, J. L. experimented with Tube Borium and Tube Hastilite* with results that turned out to be much better than anything he tried before. He does all the work himself.

Bit Life Increased Four Times

First, Jack dresses the bit in the usual way but he leaves it one-fourth inch under size. Then, while the bit is still hot, the borium is applied with an acetylene torch whose flame is slightly carbonizing. Reheated and tempered as with an ordinary bit, the built-up-to-gauge bit "will not chip any worse than a regular bit and will last about four times as long."

"In very hard formations," continues Lamb, "I cut my stroke down and run faster. I can make more hole that way and it is easier on the tools."

Experiences such has J. L. Lamb has passed along may be very worthwhile experimenting with even though your formations are different from those the veteran New Mexico driller has to contend with. Jack Lamb will be pleased to answer your questions about his method of hard surfacing by writing him through THE DRILLER.

**Tube Borium is made by the Stoody Company, Whittier, California, and Tube Hastilite is made by Haynes Stellite Co., Kokomo, Indiana.*

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We also make all Kinds of Centrifugal Pumps and Jet Pumps
Write for Descriptions
AURORA Always PUMPS
AURORA PUMP COMPANY
58 Loucks St., Aurora, Illinois

Servicemen . . .

(Continued from page 10)

result would be a restored balance, rather than an upset.

It can be expected that those servicemen who enter drilling as either operators or contractors may well benefit the industry because many of them will have picked up valuable training in chemistry, stream-flow data, ground formations, etc. This would tend to raise the general caliber of the entire industry.

As a suggestion to help ease the labor problem *now*, it would behoove every contractor to see his local veteran's placement bureau or chamber of commerce. These organizations will be pleased to be on the lookout for men who would like to become drill machine operators and can swing them toward you if you have your name on file. Or, too, state associations can work very closely with these bureaus, perhaps do some interviewing, and even help decide which local drillers most urgently need help immediately.

Rather than have servicemen shunted off to jobs they wouldn't enjoy, we urge you to contact your local agencies at once and ask them to funnel capable drillers toward the industry with which they wish to become associated—water well drilling.

New Book Issued

DIVERSITY of Deming pumps, with numerous photographs of the units in various field applications, is pictorially described in the new booklet "Deming Pumps Everywhere." Free from the manufacturer at Salem, Ohio, the 32-page book stresses the many uses of their pumps and illustrates them with new photographs of typical installations.

JENSEN Pumping Unit makes any water well more satisfactory

When you drill a good well, recommend a JENSEN Water Well Pumping Unit. This unit makes water cheap and dependable, because we build in more than 25 years of "know how." For a few cents a day over a period of many years it has served cities, parks, camps, railroads, public utilities, industries, ranches and others throughout America. It is a simple piece of equipment, strong and durable. Know more about it—write now for Bulletin No. 26.

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To the reader wishing to answer "Bargain Counter" Section advertisements appearing on these pages: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of THE DRILLER, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

DRILLS

Armstrong No. 14 drilling machine. Trailer mounted. In good condition, complete with tools and cables. Priced right. Box 0469

Will sell or trade for 30' to 40' derrick well drill. Core drill on Dodge truck. A-1 shape; 400' 2¼" pipe; core barrel; black diamond bit. Wes Hilty, Clinton, Mo. R.R. 5.

No. 34 Star drill in good working order. Mounted on a 2-ton Stewart truck. Box 0509

Keystone No. 3 drill mounted on 3½-ton Federal truck. Complete slightly used tools, ready for drilling. Located Rhode Island. Box 0479

Wood frame well drill mounted on solid rubber tires. Single cylinder gasoline engine, 6 H.P. Geared bull reel with worm feed. Chain driven sand reel equipped for wire rope. Priced to sell. No tools. Box 0488

BUSINESSES FOR SALE

Drilling Company located in Nevada. One Model 50 Special Armstrong Drill, one Model 35 Armstrong Drill, one Model N Fort Worth Spudder, complete with four to sixteen inch tools and fishing tools. Drills mounted on trucks with pneumatic tires. Also one International truck, one Dodge truck, and two Ford pickups. Receive excellent prices for drilling ranging from $2.75 for 4" holes to $7.50 for 16" holes. Have approximately 200 wells now listed for future drilling. Gross receipts last year $35,000. Cash sale price $12,000. J. D. Hill, Ely, Nevada.

Water well drilling business with cable tool rig complete with drilling tools, bailers, jacks, casing ring and wedges, test pump, swedge blocks, and various lengths of casing. This business available at a modest investment and will make money for owner. L. R. Burt. 2134 N. Church, Decatur 18, Illinois.

Water well drilling business with jet type drilling machine mounted on International truck and all necessary tools for 2½" to 4" wells or larger. Plenty of jobs available. Excellent opportunity for right party with a small investment. L. R. Burt. 2134 N. Church, Decatur 18, Illinois.

MISC.

1 Set 6" Dunn tongs. 1 Set 6" Wilson elevators. 1 Set 8" Wilson elevators. 1 Set 2¾ x 3¾-7 Spang long stroke fishing jars. All in A-1 condition. Price $250. Located Pawnee, Oklahoma. Box 0499

No. 8 Armstrong Bit Dresser with crane, dies and rings for 5", 6" and 8" bits and oil burning furnace with blower. $1500. Located in New York. Box 0468

One drill stem 4" x 12', joint size 2" x 3" - 7 Thd. A. P. I. Slightly used. Price $60.00. Box 0429

Reconditioned Saunders 4 to 12" pipe threading machine complete with new 6, 8, 10 and 12" heads with chasers. Will supply detailed information upon request. Box 0439

WANTED

Used drill in good condition. Bucyrus-Erie 21-W or 33-W. Please include price, equipment included, location of machine in reply. Box 0419

Cable or jetting type drill. Prefer combination jetting and cable tool rig but will consider standard machine. Box 0366

HELP WANTED

Driller to operate new Bucyrus-Erie drill located Central Connecticut. Will pay by foot, hour or week. Box 0449

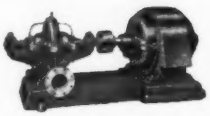
Two experienced cable tool drillers for 6" work. Union wages. Box 0459

POSITION WANTED

Experienced water well driller. Excellent references. Will accept overseas position. Box 0489

FOR A NEW WORLD OF WATER

PEERLESS now produces HORIZONTAL as well as Vertical pumps



With the recent acquisition of Dayton-Dowd Company, PEERLESS now can supply a pump for any need, including SPLIT-CASE horizontal centrifugals. Vertical and horizontal types are made in capacities from 10 to 220,000 gallons per minute.

If you are planning to "step up" your water supply, consult with PEERLESS. You will benefit by new PEERLESS developments . . . increased precision, improved designs.

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PEERLESS PUMP DIVISION
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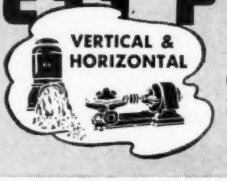

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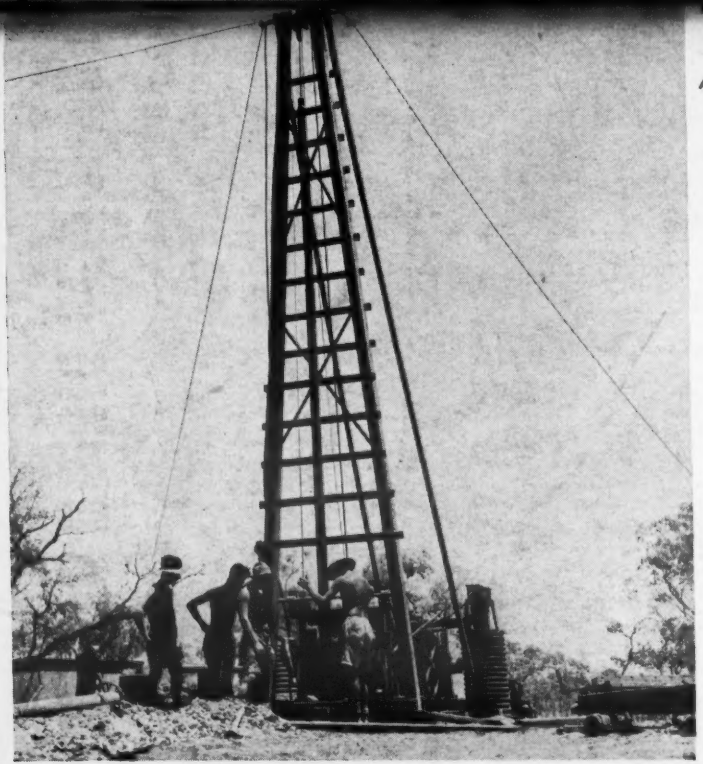

• **Australian army personnel use a standard type rig to reach water for a new night camp somewhere in Australia.** *U. S. Signal Corps Photo*

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